

had a mean diameter of about 0·3 mm.; they formed a black sand consisting chiefly of fragments of brown and red glass—sometimes decomposed, sometimes massive and enclosing microliths of olivine, and sometimes porous—with fragments of felspar, plagioclase, augite, and magnetite. There was also 5 per cent. of Diatoms, Sponge spicules, and Radiolaria.

*Heard Island to Melbourne.*—In the cruise between Heard Island and Australia (see Charts 23 and 24, and Diagrams 9 and 10) four kinds of deposits were met with, viz., Blue Mud, Diatom Ooze, Globigerina Ooze, and Red Clay.

The first of these was found in depths of 1675, 1800, and 1300 fathoms at the most southern latitude reached by the Challenger, between lat. 64° and 66° S. (see Chart 23), and therefore a short distance north of the great Ice-barrier and the Antarctic Continent. These Blue Muds contained less than 12 per cent. of carbonate of lime, which consisted chiefly of the dead shells of *Globigerina dutertrei*, and less than 20 per cent. of the remains of siliceous organisms, chiefly Diatoms. The mineral particles consisted of quartz, felspars, hornblende, garnet, glauconite, mica, tourmaline, and fragments of granitic, amphibolic, and other rocks. From the depth of 1675 fathoms the dredge brought up many kinds of rocks and pebbles, some of them showing distinct marks of glaciation, and many of them having a coating of peroxide of manganese on that part which had projected above the mud when lying at the bottom. The rocks belonged to the following lithological types:—granites, quartziferous diorites, schistoid diorites, amphibolites, mica-schists, grained quartzites, and partially decomposed earthy shales.

To the northward of the stations at which Blue Mud was found, between lat. 64° and 53° S. (see Charts 23 and 24), in depths of 1260, 1975, and 1950 fathoms, the deposit was a Diatom Ooze, usually of a yellowish straw colour, which when dried had the aspect of flour, the particles being extremely fine, and the whole taking the impress of the fingers when pressed, gritty particles being now and then recognisable. One of the samples contained as much as 22 per cent. of carbonate of lime, consisting chiefly of the dead shells of *Globigerina bulloides*, *Globigerina inflata*, and *Globigerina dutertrei*. The mineral particles were similar to those in the Blue Muds just mentioned, and appeared to make up from 3 to 15 per cent. of the deposit, the remainder of the deposit (from 62 to 88 per cent.) consisting of the frustules of Diatoms and the skeletons of Radiolaria. The dredgings in these deposits yielded, in addition to all the varieties of rocks mentioned in the Blue Muds further south, several fragments of pumice stone, basaltic volcanic rock, palagonite, and one or two fragments of a compact limestone and sandstone.

Between lat. 53° and 47° S. two soundings were obtained in 1800 and 2150 fathoms (see Chart 24). The deposit in each case was a whitish Globigerina Ooze, containing respectively 85 and 88 per cent. of carbonate of lime, which consisted chiefly of Cocoliths, Cocospheres, and pelagic Foraminifera belonging to the species: *Globigerina bulloides*, *Globigerina inflata*, *Globigerina dubia*, *Pulvinulina micheliniana*, and